Image Matrices of a Quadripole.

reactive quadripoles the scattering matrix can be expressed as shown in Eq.(27) so that its elements fulfil the relationship given by Eqs.(28). The so-called transfer matrix of a system is defined (see Eq.(30)) and the relationship between its coefficients and those of the scattering, impedance, admittance and the mixed matrices is considered (see Tables 3 and 4, p.878). A practical application of the matrices is explained by means of an example (see Fig.6) which considers a waveguide filter consisting of two identical discontinuities separated by means of a waveguide section operating with an H_{10}-type wave. The transmission matrix of the filter is given by Eq.(36) and the modulus of its reflection coefficient by Eq.(37). Expressions for the scattering and transmission matrices of some simple systems are given in the appendix (pp.880-881). There are 8 figures, 8 tables and 13 references, of which 6 are Slavic.

SUBMITTED: December 10, 1956.

AVAILABLE: Library of Congress.

YAVICH L. R.

109-1-11/18

AUTHOR: Yavich, L.R.

TITLE: Some Problems in the Design of Wideband Spark Gaps (Nekotoryye voprosy proyektirovaniya shirokopolosnykh razryadnikov)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, Nr 1, pp.94-104 (USSR)

ABSTRACT: The paper is concerned with the design of the receiver protecting devices for ultrahigh frequencies. It is assumed that for a given frequency band the protecting device should employ the resonant elements chosen in such a way as to obtain a minimum reflection coefficient. A 5-stage protecting device (duplexer) is considered. It is assumed that it is situated in a waveguide propagating an H_{10} wave (see Fig.1). It is further assumed that all the 5 resonant elements have the same resonant wavelength, λ_0, and are situated at equal distances, ℓ, from each other, such that ℓ = 1/4 the resonant wavelength in the waveguide. The losses in the resonant elements and in the connecting links are neglected. It is shown that the duplexer system

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001962310015-3"

of Fig.1 can be represented by an equivalent filter circuit shown in Fig.3, in which the relationships between the Q-factors of the resonant elements and those of the elements of the network of Fig.3 are expressed by Eqs.(5), while Q_H is given by Eq.(4); λ_{BO} in Eq.(4) denotes the resonant wavelength in the waveguide. The normalised conductances of the parallel branches B_p, Q factors of the parallel circuits Q_{pH}, normalised resistances of the series branches X_{p-1} and the effective Q factors of the series circuits $Q_{p-1,H}$ for the circuit of Fig.3 are expressed by Eqs.(6) and (7) which can approximately be represented by Eqs.(8) and (9), where ΔF and Δf are given by Eqs.(10) and (11). The problem of the synthesis of the ladder networks of the type shown in Fig.3, for a minimum reflection coefficient over a given frequency band, was considered by Bode (Ref.4) and Fano (Ref.5). The problem was also investigated by the author in an earlier paper (Ref.6). In the above works it was found that the optimum reflection coefficient can be expressed by:

$$S_{11\,\text{опт}} = e^{-\pi/B_{1M}} , \qquad (12)$$

where B_{1M} is the maximum normalised conductivity of the first resonant circuit which is given by:

$$B_{1M} = 4.Q_{1H}.\Delta F_M . \qquad (13)$$

Eq.(12) is true for a network consisting of an infinite number of stages. For the networks with a limited number of stages, Fano (Ref.5) based the solution on the Chebyshev approximation and derived a number of formulae which determine the relationship between the effective Q factors and other parameters of the first 4 elements of the circuits in Fig.3. The formulae are expressed by Eqs.(14) to (21), in which n is the number of resonant circuits in the network, a, b, α_3, α_5, α_7 are auxiliary coefficients; A_1^∞ , A_3^∞ , A_5^∞ and A_7^∞ are the Taylor series coefficients.

Some Problems in the Design of Wideband Spark Gaps

In order to obtain a minimum reflection coefficient the network should also fulfil the condition represented by Eq.(27). From the solution of Eqs.(14) and (27) it is possible to obtain optimum values of the coefficients a and b as a function of B_{1M} for n ranging from 2 to 5. The values of the reflection coefficient S_{11} as a function of for n is shown in Fig.5. The coefficients σ_1, σ_2, σ_3 and σ_4 as a function of B_{1M} for various n are evaluated on the basis of Eqs.(14) to (21) for the optimum a and b and are plotted in Figs.6, 7 and 8. On the basis of the above it is possible to design practical duplexer networks. Two practical networks are designed. One of them has a relative bandwidth of 10% and operates at a wavelength of 10 cm; the other one has the bandwidth of 20%; in both cases the effective Q-factor of the first element is 4.25, $n = 5$ and the waveguide cross-section is 72 x 34 mm. The reflection coefficient S_{11} against λ is plotted for both cases in Fig.10. The design was also checked experimentally and the calculated results for $n = 3$, Q'_{1H}, $\lambda_o = 12$ cm, $\ell = 5.43$ and waveguide cross-section 72 x 34 mm are shown in Fig.11; curve 2

Card 4/5

Some Problems in the Design of Wideband Spark Gaps 109-1-11/18

represents the calculated and curve 3 the experimental results. The paper contains 11 figures and 8 references, 4 of which are English and 4 Russian, and an appendix.

SUBMITTED: February 7, 1957

AVAILABLE: Library of Congress

Card 5/5

Л. Я. [illegible]

Метод развязки нагрузочных связей без изменения конфигурации и числа элементов схемы.

В. Ф. Голышко

Широкополосные выравнивающие восстановл[illegible] цепи с переменными параметрами.

А. А. Ерохин

Расчет колебательной системы пластинчатого электромеханического фильтра.

Р. Г. Варламов

Расчет магнитного сопротивления пластинчатого магнитопровода.

12 июня
(с 10 до 16 часов)

С. И. Аверков,
Н. С. Степанов

Распространение волн в системах с бегущими параметрами.

48

А. Л. Фельдштейн,
Л. Р. Явич

Опыт и перспективы каталогизации некоторых элементов СВЧ тракта.

В. В. Григорьев-Рыбин

Общая теория запуска заторможенных релаксаторов.

А. Г. Константиновский

Вопрос повышения стабильности режима деления частоты автоколебательных релаксационных генераторов.

12 июня
(с 18 до 22 часов)

Л. Б. Слепян

Практическая система электромагнитных единиц, совпадающая с гауссовой.

Л. Т. Ким

Воздействие суммы синусоидальных колебаний на нелинейное сопротивление.

Б. А. Варшавер

К определению характеристик нелинейных элементов радиотехнических устройств.

49

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORiE), Moscow, 8-12 June. 1959

AUTHOR: Yavich, L.R. SOV/109-59-4-2-25/27

TITLE: Application of the Wave Matrices for the Calculation of Transverse-Symmetrical Quadripoles (Primeneniye volnovykh matrits dlya rascheta chetyrekhpolyusnikov s poperechnoy simmetriyey)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 2, pp 341-344 (USSR)

ABSTRACT: It is pointed out that the calculation methods described by the author in an earlier paper (Ref 1) can be considerably simplified if the quadripole possesses a vertical symmetry. The simplified analysis can be done if the quadripole (see Fig 1) can be split into two image-reflected quadripoles I and II. The resulting quadripole can then be considered as a cascaded system of two identical quadripoles; it should be remembered, however, that the transmission of energy in the quadripole II takes place in the opposite direction to that in the quadripole I. The transfer matrix of the resulting quadripole can be expressed as

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$$[T^3] = \begin{bmatrix} T_{11} & T_{12} \\ T_{21} & T_{22} \end{bmatrix} \begin{bmatrix} T_{11} & -T_{21} \\ -T_{12} & T_{22} \end{bmatrix} = \begin{bmatrix} T_{11}^2 - T_{12}^2 & -T_{11}T_{21} + T_{12}T_{22} \\ T_{11}T_{21} - T_{22}T_{12} & -T_{21}^2 + T_{22}^2 \end{bmatrix} \quad (2)$$

where T_{11}, T_{12}, T_{21} and T_{22} are the elements of the transfer matrix when the energy is transmitted along the quadripole from the left to the right (see Fig 2). From Eq (2) it is found that the reflection coefficient in the system is given by Eq (3) and its insertion loss is expressed by Eq (4). The above formulae are used to determine the insertion loss and the modulus of the reflection coefficient for a filter consisting of the segments of coaxial lines having lengths l_1 and $2l_2$ and characteristic impedances ρ_1 and ρ_2 (see Fig 3). The insertion loss is expressed by Eq (8). The value of the reflection coefficient is also determined for a quadripole which consists of two equal segments of

SOV/109-59-4-2-25/27

Application of the Wave Matrices for the Calculation of Transverse-Symmetrical Quadripoles

a line and three admittances (see Fig 4). The reflection coefficient is expressed by Eq (14) in which α and β are defined by Eq (15). The author makes acknowledgment to R.Sh.Shakirova for her help. There are 4 figures and 6 references of which 4 are Soviet and 2 English.

SUBMITTED: 16th April 1958

Card 3/3

SOV/109- - -4-3-25/38

AUTHORS: Fel'dshteyn, A.L., Yavich, L.R.

TITLE: A Comparison of Step-like and Continuous Line Sections (K sravneniyu stupenchatykh i plavnykh perekhodov)

PERIODICAL: Radiotekhnika i Elektronika, Vol 4, Nr 3, 1959, pp 527-529 (USSR)

ABSTRACT: First, a Chebyshev-type step-like section (see Fig 1) is considered. This device was investigated by a number of authors (Refs 2,5,6 and 8). It is assumed that the length of this type of line section, which consists of n small steps is given by:

$$l_o = \frac{1}{2\pi} \Lambda_2 \, n \, \text{arc cos} \left\{ \frac{1}{\cos \frac{K}{n}} \right\} \quad (1)$$

where Λ_2 is the wavelength in the transmission line corresponding to the "long-wave" boundary of the transmission range; K is expressed by Eq (2), where R is the ratio between the characteristic impedances of the matched lines; h is the maximum deviation of the Chebyshev polynomial from its zero value. When n in Eq (1) tends to infinity, the line section represents a continuous transition, and Eq (1) is in the form of

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A Comparison of Step-like and Continuous Line Sections

Eq (3). The problem consists of comparing values of ℓ_0, as given by Eqs (1) and (3), for the same value of R and the same value of the reflection coefficient. The results are shown in Fig 4 for various values of n and Γ; the limiting case of a continuous transition is represented by the dashed curves.

There are 5 figures and 8 references, 6 of which are Soviet and 2 English. One of the Soviet references is translated from English.

Card 2/2

SUBMITTED: September 18, 1958

S/109/60/005/04/012/028
E140/E435

AUTHOR: Yavich, L.R.

TITLE: Certain Relationships for the Cascade Connection of n Identical Irreversible Four-Terminal Networks

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 4, pp 633-637 (USSR)

ABSTRACT: This is a continuation of previous work (Ref 6) and is based on application of the "ideal power transformer" introduced by Zelyakh (Ref 2). Using this and some network theorems previously demonstrated (Ref 6), it is shown that the cascade connection of n identical irreversible four-terminal networks can be represented by an equivalent circuit of n identical reversible networks and a single ideal power transformer. Then Wilson's theorem (Ref 1) may be used for finding the transmission matrix. There are 5 figures and 6 references, 5 of which are Soviet and 1 English.

SUBMITTED: February 16, 1959

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S/109/60/005/05/006/021
E140/E435

AUTHORS: Fel'dshteyn, A.L. and Yavich, L.R.

TITLE: The Calculation of Stepped Junctions with Maximally-Flat Characteristics

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 5, pp 762-770 (USSR)

ABSTRACT: A method is given for calculating two- and three-step waveguide junctions with maximally-flat characteristics. Tables are given for wave-impedance changes between 1.2 and 9.2. Acknowledgements are expressed to R.Sh.Sharikova for her assistance with the calculation work. There are 9 figures, 2 tables and 3 Soviet references.

4

SUBMITTED: April 13, 1959

Card 1/1

21331
S/106/60/000/010/006/006
A055/A033

9,3230 (also 1031,1132)

AUTHOR: Yavich, L. R.

TITLE: Application of Chebyshev polynomials for the calculation of a cascade connection of n identical quadripoles.

PERIODICAL: Elektrosvyaz', no. 10, 1960, 70 - 71

TEXT: The problem of determining the matrix $[a]^n$ of a cascade connection of n identical quadripoles for a given matrix $[a]$ of a single quadripole, is solved by Doležal in his article published in the Czechoslovak periodical "Slaboproudy obzor", 19, č. 4, 1958. Doležal succeeded to obtain a sufficiently simple solution for reversible quadripoles ($\det[a] = |a| = 1$), solution based upon Chebyshev polynomials. In the present article, the author shows, by a comprehensive mathematical reasoning, that the method of Doležal can also be applied for the calculation of non-reversible quadripoles. Like Doležal, he examines the general case of a cascade connection of n identical quadripoles, each of the quadripoles being described by a matrix $[X]$ (see Figure 1). By $[X]$ can be understood either of the matrices

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S/106/60/000/010/006/006
A055/A033

Application of Chebyshev polynomials ....

$$[a], [A] \text{ and } [T]$$

$[A]$ being the mormalized matrix, and $[T]$ the wave matrix of transmission. Each of these matrices links the following magnitudes:

$$\begin{bmatrix} U_1 \\ I_1 \end{bmatrix} = [a] \begin{bmatrix} U_2 \\ I_2 \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} U_2 \\ I_2 \end{bmatrix},$$

$$\begin{bmatrix} U_1^{norm} \\ I_1^{norm} \end{bmatrix} = [A] \begin{bmatrix} U_2^{norm} \\ I_2^{norm} \end{bmatrix} = \begin{bmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{bmatrix} \begin{bmatrix} U_2^{norm} \\ I_2^{norm} \end{bmatrix},$$

$$\begin{bmatrix} U_{1n}^{norm} \\ U_{10}^{norm} \end{bmatrix} = [T] \begin{bmatrix} U_{2n}^{norm} \\ U_{20}^{norm} \end{bmatrix} = \begin{bmatrix} T_{11} & T_{12} \\ T_{21} & T_{22} \end{bmatrix} \begin{bmatrix} U_{2n}^{norm} \\ U_{20}^{norm} \end{bmatrix}$$

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Application of Chebyshev polynomials S/106/60/000/010/006/006
A055/A033

[Abstractor's note: subscript "norm" is the translation of the original "H".] where U_1 and I_1 are the quadripole input voltage and current, U_2 and I_2 are the quadriple output voltage and current, U_1^{norm}, I_1^{norm}, U_2^{norm}, I_2^{norm} are the corresponding magnitudes (according to the normalization rules given by the author in his article Ref. 4: Wave Matrices of a Quadripole, Radiotechnika, vol. II, No. 7, 1957), U_{1n}^{norm}, U_{10}^{norm}, and U_{2n}^{norm}, U_{20}^{norm} are normalized incident and reflected waves of voltage at the quadripole input and output respectively. No limitations are imposed upon matrix X, which thus represents any arbitray quadripole. In the author's calculations, where Chebyshev polynomials are resorted to, the passage from non-reversible ones is based upon the use of the ideal power converter described by E. V. Zelyakh in his article (Ref. 3) Ideal Power Converter, Elektrosvyaz', No. 1, 1957. There are 4 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The English language publication reads as follows: Tables of Chebyshev Polynomials, National Bureau of Standards, Applied Mathematics, Series 9, Washington, December 1952.

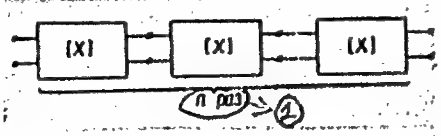
SUBMITTED: October 28, 1959

Card 3/4

21331
S/106/60/000/010/006/006
A055/A033

Application of Chebyshev polynomials ....

Figure 1:
1 - n times.



Card 4/4

9.1400

77175
SOV/108-15-1-1/13

AUTHOR: Fel'dshteyn, A. L., Yavich, L. R.

TITLE: Engineering Computation of Chebyshev's Stepped Transitions

PERIODICAL: Radiotekhnika, 1960, Vol 15, Nr 1, pp 3-15 (USSR)

ABSTRACT: The paper is an exposition of the method of engineering computation of stepped transitions between transmission lines. The results of calculation of 405 typical problems are given in table form. The following two basic definitions are given: (1) A stepped transition is a quadrupole consisting of n sections of the transmission line ("steps") which have the same length ℓ and various wave impedances ρ_1 (see Fig. 1).

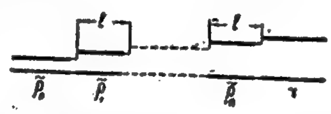


Fig. 1.

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The purpose of a stepped transition is to match two lines with the wave impedances ρ_o and r, respectively. (2) A stepped transition is called optimal, or Chebyshev, when (a) for a selected wave impedance jump $R = r\rho_o$, (b) a selected permissible mismatching value is $/\Gamma/_{max}$, and (c) for a selected passband $\lambda_2 - \lambda_1$, the transition has a minimum overall length $\ell_o = n\ell$. The attenuation of a Chebyshev transition equals 10 $\log_{10}$ of the magnitude $/T_{11}/^2$, which is:

$$|T_{11}|^2 = 1 + h^2 T_n^2\left(\frac{\cos\theta}{p}\right) = 1 + h^2 T_n^2(x), \quad (1)$$

where $T_{11}(x)$ is the Chebyshev polynomial of the first type and n-th order, n = 1, 2, 3... being the

number of transition steps; h is a parameter defining the permissible mismatch $|\Gamma|_{max}$; p is a parameter defining the width of the passband; $\Theta = 2\pi \ell / \Lambda$ is electrical length of the step and Λ is the wavelength in the transmission line. The stepped transitions are usually characterized by 5 parameters: n, h, p, R and ℓ_0, of which 3 may be selected independently of each other whereas the two others follow from computation. The relationship between these parameters is derived from Eq. (1) by considering cos Θ = 1, i.e., for zero length of the steps, and taking values of the argument x = cos Θ/p at the boundaries of the passband. The following expressions have been obtained:

$$p = \frac{1}{\cos\left(\frac{1}{n} \operatorname{arc\,cos} C\right)}. \tag{12}$$

$$\Lambda_1 = \frac{2\pi l}{\pi - \arc\cos p}, \qquad (15)$$

$$\Lambda_2 = \frac{2\pi l}{\arc\cos p}. \qquad (16)$$

where Λ_1 and Λ_2 are the wavelengths in the transmission line, generally different from λ_1 and λ_2 in the outside space. The length $\ell_0 = n\ell$ is given as:

$$\frac{l_0}{\Lambda_2} = \frac{1}{2\pi} n \arc\cos\left\{\frac{1}{\cos\frac{1}{n}\arc\cos C}\right\}. \qquad (18)$$

C in Eq. (18) and (12) is defined as:

$$C = \frac{R-1}{2h\sqrt{R}}.$$

Expressions are given for the wave impedances ρ_1 of the steps of transitions with n = 2, n = 3, and n = 4. Values of R, p, and ρ_1 are given in tables for n = 2, n = 3, and n = 4, and for various magnitudes of $/\Gamma/_{max}$. The tables give the solution of 405 typical synthesis problems of stepped transitions. Two numerical examples illustrate the use of the tables for rapid computation of similar problems. In an appendix to the paper, expressions for ρ_1 and ρ_2 in a two-step transition are derived by comparing the coefficients of cos Θ in Eq. (1) and in an attenuation equation obtained as a product of matrices of stepped transition elements. R. Sh. Shakirova helped make the calculations.

Engineering Computation of Chebyshev's Stepped Transitions

77175
SOV/108-15-1-1/13

There are 5 figures; 3 tables; and 7 Soviet references.

SUBMITTED: October 14, 1958

Card 6/6

YAVICH, L. R.

Remarks on the calcualtion of an n-number of series-connected four-terminal networks. Radiotekh.i elektron.6 no.5:824-826 My '61. (MIRA 14:4)

(Electric networks)

S/106/62/000/004/010/010
A055/A101

AUTHOR: Yavich, L.R.

TITLE: On the computation of the elements of the resultant matrix of a cascade connection of four-pole networks

PERIODICAL: Elektrosvyaz', no. 4, 1962, 70 - 71

TEXT: This article deals with a method permitting the determination of the elements of the matrix of the resultant four-pole network directly from the elements of the matrices of the component four-pole networks, without calculating the intermediate matrices. This method was described by Dreikorn and Stockinger (Rationelle Berechnung mehrfacher Matrizenprodukte, Arch. elektr. Übertrag, 1959, 13 no. 7). The object of the present article is merely to illustrate this method on a practical example. The author applies the method to the case of a transistorized two-stage amplifier. He replaces the transistors by T-shaped equivalent circuits and by ideal power converters (according to the method of E.V. Zelyakh, Elektrosvyaz', no. 1, 1957). He obtains thus the overall equivalent circuit of the amplifier (Fig. 3), representing the amplifier as a cascade connection of several four-pole networks. The [a] matrix of the amplifier is:

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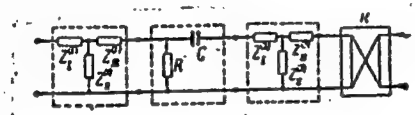
On the computation of the elements of ....

$$[a] = [^{(1)} a][^{(2)} a][^{(3)} a] \frac{1}{K}, \tag{1}$$

Where K is the resultant ideal power conversion coefficient. The author computes the elements of this matrix with the aid of the Dreikorn-Stockinger matrix chart, which is reproduced in the article. There are 3 figures, 1 table and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

SUBMITTED: January 23, 1961

Figure 3:



APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001962310015-3"

34034
S/109/62/007/001/012/027
D266/D301

9,1400

AUTHOR: Yavich, ~~L. R.~~

TITLE: Synthesis of stepped transmission line transformers with a maximally flat frequency characteristic

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 1, 1962, 105 - 112

TEXT: The paper is concerned with the design of maximally flat step-transformers for specified bandwidth and reflection coefficient. The design method can be applied to any number of steps. The characteristic impedances of the two transmission lines to be connected are $\tilde{\rho}_0$ and r respectively and their ratio is represented by R. The transformer consists of n elements of characteristic impedance, $\tilde{\rho}_i$ and length, $l = \Lambda_0/4$, where Λ_0 is the wavelength at the middle of the band (not necessarily equal to the free space wavelength λ_0). The transmission coefficient of the whole system is written in the following form:

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Synthesis of stepped transmission ...

$$/T_{11}/^2 = 1 + \frac{(R - 1)^2}{4R} \cos^{2n}\theta \qquad (1)$$

where $\theta = 2\pi l/\Lambda$ - electrical length. The absolute value of the reflection coefficient can be expressed with $/T_{11}/^2$ as follows:

$$/\Gamma/ = \sqrt{\frac{/T_{11}/^2 - 1}{/T_{11}/^2}}. \qquad (2)$$

If the maximum permissible value of the reflection coefficient, Γ_Γ, and the edges of the band $\Lambda_1 \Lambda_2$ are specified, the required number of elements can be determined. It is an interesting property of the maximally flat transformer (in contrast to the Chebyshev transformer) that the ratio of characteristic impedance is independent of Γ_Γ. In order to apply the method which A. L. Fel'dshteyn (Ref. 2: Radiotekhnika, 1960, 15, 11, 11) used for the Chebyshev transformer the author rewrites (1) in the form

$$/T_{11}/^2 = 1 + H^2\left(\frac{\cos\theta}{S}\right)^{2n} = 1 + H^2\Omega^{2n}, \qquad (7)$$

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D266/D301

Synthesis of stepped transmission ...

where $$S^n = \frac{2H\sqrt{R}}{R - 1}, \qquad H = \frac{/\Gamma/_r}{\sqrt{1 - /\Gamma/_r^2}} \tag{8}$$

and varies between +1 and -1. The characteristic impedances can then be determined with Fel'dshteyn's method. If the approximation

$$\frac{1}{1 - /\Gamma/^2} \simeq 1 + /\Gamma/^2 \tag{17}$$

is used the resulting equations are much simplified and the reflection coefficients at each step are obtained in the form of binomial coefficients [Abstractor's note: The author is apparently unaware of the fact that this problem was solved by W.W. Hansen a long time ago (Notes on Lectures, ch. 6, MIT Rad. Lab. 1941-1944)]. The exact and approximwte values of $\rho_6 = \tilde{\rho}_6/\tilde{\rho}_0$ are compared for a six element transformer for R = 1.2 - 9. It is shown that the maximum error committed is about a half percent. In Appendix I an example is worked out whilst in Appendix II the ratio of the characteristic impedances $\rho_i = \tilde{\rho}_i/\tilde{\rho}_o$ are tabulated for R = 1.2 - 10 and n = 4, 5, 6.

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D266/D301

Synthesis of stepped transmission ...

There are 1 figure, 2 tables and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. J. Riblet, Trans, IRE, 1957, MTT-5, 36.

SUBMITTED: January 9, 1961

Card 4/4

YAVICH, L.R.

Problem concerning the calculation of the resulting matrix of series connected four-terminal networks. Elektrosviaz' 16 no.4:70-71 Ap '62. (MIRA 15:4)

(Electric networks) (Transistor circuits)

35377
S/108/62/017/003/003/009
D299/D301

9,1400 (1127,1144)

AUTHOR: Yavich, L.R., Member of the Society (see Association)

TITLE: Input resistance of stepwise junctions

PERIODICAL: Radiotekhnika, v. 17, no. 3, 1962, 22 - 25

TEXT: The input resistance of stepwise junctions is determined. The advantages are ascertained of junctions with maximally-flat frequency characteristics, as compared to Chebyshev-type junctions, if constant resistance-values and small reactance-values are required. A stepwise junction is considered between 2 homogeneous transmission lines with resistances ρ_0 and r. The junction consists of n similar sections of length l. It is required to find the input impedance z_{in}, corresponding to different laws of change of the attenuation function L of the junctions; thereupon it is ascertained which type of junction is more advantageous. The problem reduces to calculating the complex element of the wave transmission matrix T_{11} for the 2 types of junction under consideration: Chebyshev

Card 1/3

and maximally-flat. For the first type, the function L is expressed by

$$L = /T_{11}/^2 = 1 + h^2 T_n^2\left(\frac{\cos\theta}{S}\right) = 1 + h^2 T_n^2(\Omega), \quad (6)$$

and for the second, L is expressed by

$$L = /T_{11}/^2 = 1 + H^2\left(\frac{\cos\theta}{S}\right)^{2n} = 1 + H^2\Omega^{2n}, \quad (7)$$

where h and H are proportionality factors, S - a scaling factor, θ - the electrical length of a step, and Λ - the wavelength. After computations, one obtains:

$$T_{11}(P) = \frac{K}{\sqrt{(P^2-1)^n}}(P - P_1)(P - P_2)\ldots(P - P_n), (9)$$

where K is the coefficient of the leading term of the polynomial T_{11}. Formula (9) in conjunction with the expressions for the real and imaginary parts of Z_{in} ($Z_{in} = z_{in}/\rho_o$), yield the solution to the problem. The resistance- and reactance components of the impe-

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001962310015-3"

Input resistance of stepwise junctions S/108/62/017/003/003/009
D299/D301

dance are compared in 2 figures. The characteristics of the input impedance of Chebyshev junctions become more irregular with increasing number of steps. Conclusions: In stepwise junctions in which almost-constant resistance-values and very small reactances are required, it is advantageous to use junctions with maximally-flat frequency characteristic and number of steps n = 5, 6. Analogous requirements can be met by means of Chebyshev stepwise junctions with very close tolerances on mismatching. This however, cancels the advantages (wide bandpass) of the Chebyshev junctions. There are 5 figures and 3 Soviet-bloc reference. X

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio Engineering and Electrical Communications imeni A.S. Popov) [Abstractor's note: Name of Association taken from first page of journal]

SUBMITTED: January 11, 1961 (initially)
July 8, 1961 (after revision)

Card 3/3

FEL'DSHTEYN, Aleksandr L'vovich; YAVICH, Lev Rafaelovich; SMIRNOV, Vitaliy Petrovich; PERETS, R.I., red.; BUL'DYAYEV, N.A., tekhn. red.

[Manual on the elements of waveguide technology] Spravochnik po elementam volnovodnoi tekhniki. Moskva, Gosenergoizdat, 1963. 359 p. (MIRA 17:2)

L 10407-63 BDS
ACCESSION NR: AP3001124 S/0108/63/018/006/0015/0025 45

AUTHOR: Mazepova, O. I.; Fel'dshteyn, A. L.; Yavich, L. R. Members of the Society (see Association)

TITLE: Engineering calculation of SHF band-pass filters

SOURCE: Radiotekhnika, v. 18, no. 6, 1963, 15-25

TOPIC TAGS: SHF band-pass filter

ABSTRACT: The method of SHF filter calculation is based on an equivalent replacing of the lumped-parameter systems (low-pass filters and ladder-type band-pass filters) with the filters formed by inhomogeneities in waveguides. The article offers: (1) a systematic procedure for calculating SHF filters with quarter-wave couplings; (2) tabulated typical calculations. Functions of effective attentuation for both the Tchebycheff and the maximum-flat-frequency response filters are evaluated. Cavity resonators are represented by waveguide stubs terminated with three inductive posts on each end. The design tables were compiled by means of an electronic computer. "Programing was performed by Engineer A. V. Ivakina." Orig. art. has: 9 formulas, 11 figures, and 7 tables.

Card 1/2

L 10407-63
ACCESSION NR: AP3001124

0

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im A. S. Popova (Scientific and Technical Society of Radio Engineering and Electro-communications)

SUBMITTED: 07 Aug62 DATE ACQD: 01Jul63 ENCL: 00

SUB CODE: CO,SD NO REF SOV: 002 OTHER: 006

ja/

Card 2/2

YAVICH, L.R.

Local reflection coefficients of junctions with an arbitrary number of steps. Radiotekh. i elektron. 9 no.4:750-752 Ap '64.
(MIRA 17:7)

ACCESSION NR: AP4038599 S/0108/64/019/005/0026/0029

AUTHOR: Yavich, L. R. (Active member)

TITLE: Design of Cheby*shev directional couplers with an arbitrary number of sections

SOURCE: Radiotekhnika, v. 19, no. 5, 1964, 26-29

TOPIC TAGS: waveguide, waveguide coupler, directional coupler, directional coupler design, Cheby*shev directional coupler, transmission line

ABSTRACT: A cascade connection of n reversible 8-pole networks is considered. Cheby*shev functions are developed into Fourier series. The transmission factor for an even n = 2N number of sections is given by:

$$P_m = \frac{h}{2} \sum_{q=m}^{N} \frac{(-1)^{N-q} (2N-1)(N+q-2)!}{(q-m)!\,(q-1+m)!\,(N-q)!} \left(\frac{1}{S}\right)^{2q-1},$$

Card 1/2

ACCESSION NR: AP4038599

where $m = 1, 2, \ldots, N$; h and S are the amplitude and scale factors. A kindred formula is offered for n = 2N+1. Both formulas can be used for calculating Cheby*shev's step-type matching units. Orig. art. has: 3 figures and 20 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 06Feb63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: EC NO REF SOV: 002 OTHER: 000

FEL'DSHTEYN Aleksandr L'vovich; YAVICH, Lev Rafaelovich. Prinimala uchastiye PROKHOROVA, N.I.; YAKOBSON, A.Kh.

[Synthesis of four-terminal and eight-terminal microwave networks] Sintez chetyrekhpoliusnikov i vos'mipoliusnikov na SVCh. Moskva, Izd-vo "Sviaz'," 1965. 352 p. (MIRA 18:5)

KIRILLOV, L.G.; YAVICH, L.R.

Calculation of stepping junctions and directional couplers with a random number of elements. Radiotekh. i elektron. 10 no.6: 1153-1155 Je '65. (MIRA 18:6)

L 2609-66

ACCESSION NR: AP5020133

UR/0109/65/010/008/1536/1539
621.396.671.2

24
B

AUTHOR: Yavich, L. R.

TITLE: Synthesizing smooth Chebyshev transition elements

SOURCE: Radiotekhnika i elektronika, v. 10, no. 8, 1965, 1536-1539

TOPIC TAGS: waveguide, waveguide matching

ABSTRACT: A mathematical method developed by T. T. Taylor for synthesizing continuous-radiator antennas (IRE Trans., 1955, AP-3,1,16) is adapted for synthesizing the Chebyshev-type tapered transition element (matching section). These formulas for the relative characteristic impedance are developed:

$$\frac{\rho(x)}{\rho(0)} = \exp\left\{\ln R\left[\frac{x}{l_0} - \frac{1}{\pi}\frac{F(1)}{F(0)}\sin\left(2\pi\frac{x}{l_0}\right)\right]\right\},$$

where

$$\frac{F(1)}{F(0)} = \prod_{\alpha=\bar{n}}^{\infty}\left(1-\frac{1}{\alpha^2}\right)\prod_{\alpha=1}^{\bar{n}-1}\left\{1-\frac{1}{\alpha^2\left[A^2+\left(\alpha-\frac{1}{2}\right)^2\right]}\right\};$$

Card 1/2

L 2609-66

ACCESSION NR: AP5020133 0

The formulas are offered for calculating the profile of the tapered transition element. A numerical example shows that the tapered Chebyshev element comes very close to the compensated (optimal) tapered element. Orig. art. has: 2 figures, 20 formulas, and 1 table.

ASSOCIATION: none

SUBMITTED: 01Oct64 ENCL: 00 SUB CODE: EC

NO REF SOV: 002 OTHER: 003

Card 2/2

L 26415-66 EWA(h)/EWT(1)

ACC NR: AM5018516 Monograph UR/ 60 Bt1

Fel'dshteyn, Aleksandr L'vovich; YAvich, Lev Rafaelovich

Synthesis-high frequency four-terminal and eight-terminal networks (... chetyrekhpolyusnikov i vos'mipolyusnikov na SVCh) Moscow, Izd-vo "Svyaz", 1965. 352 p. illus., biblio. 5700 copies printed.

TOPIC TAGS: communication network, array synthesis, superhigh frequency, SHF communication, transmission line, waveguide coupler

PURPOSE AND COVERAGE: This book is intended as a manual for scientists, technicians, and college students concerned with the theory and operation of transmission lines. Theoretical and design problems concerning filters, matching devices, directional couplers, and other similar devices. The authors thank O. I. Mazepova, Ye. V. Solov'yeva, A. V. Ivakina, V. P. Smirnov, R. Sh. Shakirova, and N. I. Prokhorova for their assistance.

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Card 1/2 UDC: 621.372.5/6:621.3.029.6.001.24

L 26415-66

ACC NR: AM5018516

0

SUB CODE: 09/ SUBM DATE: 09Apr65/ ORIG REF: 080/ OTH REF: 033

Card 2/2

YAVICH, M.P. (Moskva)

Effect of hypothermia on the restoration of the nucleic acid balance in various organs and tissues. Eksp.khir. 4 no.2: 55-56 Mr-Ap '59. (MIRA 12:5)
(HYPOTHERMIA, eff.
on nucleic acid regen. (Rus))
(NUCLEIC ACIDS, metab.
eff. of hypothermia on regen. (Rus))

YAVICH, M.P.

Changes in the intensity of protein synthesis in the injured mycardium of rats. Dokl. AN SSSR 134 no.6:1478-1480 O '60. (MIRA 13:10)

1. Institut morfologii zhivotnykh im. A.N.Severtsova Akademii nauk SSSR. Predstavleno akademikom A.N.Bakulevym.
(PROTEIN METABOLISM) (HEART—WOUNDS AND INJURIES)

YAVICH, M.P.

Change in autolytic processes in lesion of the myocardium. Eksp. khir.i anest. 6 no.3:58-59 '61. (MIRA 14:10)
(HEART--DISEASES)

POLEZHAYEV, L.V.; AKHABADZE, L.V.; ZAKHAROVA, N.A.; YAVICH, M.P.

Effect of pyrogenal and myocardial hydrolyzate on the regeneration of the heart muscle. Dokl.AN SSSR 138 no.3:714-717 My '61.
(MIRA 14:5)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR. Predstavleno akademikom A.N.Bakulevym.
(Heart—Muscle) (Regeneration (Biology))
(Pharmacology) (Tissue extracts)

YAVICH, M.P.

Change of SH groups in tissues of the injured myocardium of a rat. Dokl. AN SSSR 139 no.6:1471-1473 Ag '61. (MIRA 14:8)

1. Institut morfologii zhivotnykh im. A.N. Severtsova AN SSSR. Predstavleno akademikom A.N. Bakulevym.

(MERCAPTO GROUP)
(HEART--WOUNDS AND INJURIES)

POLEZHAYEV, L.V.; AKHABADZE, L.V.; MUZLAYEVA, N.A.; YAVICH, M.P.

Regeneration of a rat's myocardium as an effect of ribonucleic acid and pyrogenal treatment. Dokl.AN SSSR 145 no.5:1180-1183 '62. (MIRA 15:8)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR. Predstavleno akademikom A.N.Bakulevym.
(PYROGENAL) (NUCLEIC ACIDS) (HEART—MUSCLE)
(REGENERATION (BIOLOGY))

YAVICH, M.P.

Variation in nucleic acid content during the healing of an injured myocardium. Dokl. AN SSSR 147 no.1:248-251 N '62. (MIRA 15:11)

1. Institut morfologii zhivotnykh im. A.N. Severtsova AN SSSR. Predstavleno akademikom A.N. Bakulevym.

(Nucleic acids) (Heart—Muscle)

(Regeneration (Biology))

POLEZHAYEV, L.V. (Moskva V-333, 2-y Akademicheskiy pr., d.4, kv.4);
AKHABADZE, L.V.; MUZLAYEVA, N.A.; YAVICH, M.P.

Stimulation of the regeneration of the myocardium in inhibited cicatrization. Grud. khir. 5 no. 2:47-54 Mr-Ap '63. (MIRA 17:2)

1. Iz laboratorii eksperimental'noy morfologii zhivotnykh (zav.- prof. L.V.Polezhayev) Instituta morfologii zhivotnykh imeni A.N. Severtsova (direktor - chlen-korrespondent AN SSSR G.K.Khrushchov).

YAVICH, M.P.

Effect of vitamin B_{12} and pyrogenal on the intensity of protein synthesis in a damaged heart muscle. Dokl. AN SSSR 150 no.1:217-220 My '63. (MIRA 16:6)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR. Predstavleno akademikom A.N.Bakulevym.
(CYANOCOBALAMINE) (PROTEIN METABOLISM) (HEART--MUSCLE) (PYROGENAL)

POLEZHAYEV, L.V.; AKHABADZE, L.V.; MUZLAYEVA, N.A.; YAVICH, M.P.

Stimulation of myocardium regeneration in rabbits and dogs.
Dokl. AN SSSR 153 no.6:1450-1453 D '63. (MIRA 17:1)

1. Institut morfologii zhivotnykh im. A.N. Severtsova AN SSSR. Predstavleno akademikom A.N. Bakulevym.

POLEZHAYEV, Lev Vladimirovich, prof.; AKHABADZE, Lyubov' Viktorovna; MUZLAYEVA, Nina Andreyevna; YAVICH, Marina Pinkhusovna; : KOSOBUTSKI[illegible]

[Stimulation of the regeneration of the heart muscle] Stimuliatsiia regeneratsii myshtsy serdtsa. Moskva, Nauka, 1965. 395 p. (MIRA 18:11)

1. Akademiya nauk SSSR. Institut morfologii zhivotnykh.

YEGOROV, I.F., inzh.; YAVICH, Sh.I., inzh.

New type of fastening for pin couplings. Sudostroenie 24 no.7:69-70 Jl '58. (MIRA 11:9)
(Fastenings)

ZAYTSEV, V.F., inzh.; YAVICH, S.M., inzh.

Electrochemical deoxydation of feedwater. Prom. energ. 17 no.12: 18-21 D '62. (MIRA 17:4)

SOV/85-58-11-20/33

AUTHOR: Yavich, Z., Master of Sports, Vil'nyus (Vilnius)

TITLE: First [Aviation-Sports Club Competitions] in the Republic (Vpervyye v respublike)

PERIODICAL: Kryl'ya rodiny, 1958, Nr 11, p 19 (USSR)

ABSTRACT: The author states that the opening of the first aviation-sports club in Vil'nyus contributed greatly to the development and interest in parachute sports in the Lithuanian Republic.

ASSOCIATION: Aviatsionno-sportivnyy klub (Aviation-Sports Club)

Card 1/1

SILAKOVA, A.I.; TRUSH, G.P.; YAVILYAKOVA, A.

Micromethod for the determination of ammonia and glutamine in trichloroacetic tissue extracts. Vop. med. khim. 8 no.5: 538-544 S-O'62 (MIRA 17:4)

1. Institut biokhimii Akademii nauk Ukrainskoy SSR, Kiyev.

SILAKOVA, A.I.; YAVILYAKOVA, A.

Involvement of the amide nitrogen of proteins in the formation of ammonia in the muscles. Vop. med. khim. 10 no.1:40-43 Ja-F '64. (MIRA 17:12)

1. Institute of Biochemistry, Academy of Sciences of the Ukrainian S.S.R., Kiyev.

BUDNIKOV, P.P.; VOLAROVICH, M.P.; POLINKOVSKAYA, A.I.; YAVITS, I.N.

Study of the character of the expansion of some types of volcanic, hydrated glass by means of motion-picture filming. Stroi.mat. 9 no.3:31-33 Mr '63. (MIRA 16:4)
(Perlite (Mineral)) (Motion-picture photography)

VOLAROVICH, M.P.; POLINKOVSKAYA, A.I.; YAVITS, I.N.

Blistering of water-containing vulcanic glasses (perlites) studied by motion-picture photography. Koll.zhur. 25 no.5:512-514 S-O '63. (MIRA 16:10)

1. Respublikanskiy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov, Moskva.

YAVITS, I.N., inzh.

Investigation of the viscosity and fusibility of some volcanic glass containing water. Sbor. trud. ROSNIIMS no.25: 54-62 '62 (MIRA 17:8)

YAVITS, I.N., inzh.; NASEDKIN, V.V., inzh.

Effect of some properties of acid, volcanic, water-containing glass on the quality of expanded perlite. Sbor. trud. ROSNIIMS no.25:94-104 '62 (MIRA 17:8)

BUGOV, A.U., inzh.; YAVITS, S.H., inzh.

Study of the stressed state of housings and flange connections of ball locks. [Trudy] LMZ no.10:191-198 '64. (MIRA 18:12)

KOVALENKO, V.A., inzh.; YAVITS, S.N., inzh.

Results of the field tests of moments acting on the blades of the gate apparatus of a reversible-blade hydraulic turbine. Energomashinostroenie 10 no.8:12-14 Ag '64. (MIRA 17:11)

1. YAVITS, Z. B.

2. USSR (600)

4. Moscow - Floriculture

7. More attention to floriculture. Gor khoz Mosk No 11 1947

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

YENIKEYEV, P.N.; KOZLOV, P.T.; YAVKIN, P.Ye.

Oil and gas resources of Central Asia and prospects for their development. Geol.nefti i gaza 9 no.2:1-5 F '65.

(MIRA 18:4)

1. Gosudarstvennyy geologicheskiy komitet SSSR, Vsesoyuznyy zaochnyy politekhnicheskiy institut i Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut.

COUNTRY : USSR
CATEGORY : Soil Science. Organic Fertilizers. J

ABS. JOUR. : RZhBiol., No. 3 1959, No. 10704

AUTHOR : Kurbatov, M. S., Yavkina, A. I.
INST. : Kirgiz Scientific Research Institute of Agriculture
TITLE : Fertilizing Effect of Waste Water and Sewage in Chuyskaya Valley.

ORIG. PUB. : Tr. Kirg. n.-i. in-ta zemledeliya, 1957, vyp. 1, 152-157

ABSTRACT : At 5 sugar refineries in Chuyskaya Valley, Kirgiz SSR, several hundred thousand tons of filter press sewage accumulated containing 10-15% of organic matter, up to 2% of P_2O_5, 0.5% Of N, 40-45% of Ca and different trace elements. These refineries dump 4-5 million cubic meters of waste water annually, enriched with Ca and Mg and containing 25-58 kilograms of N in 1000 cubic meters, and also K_2O and P_2O_5. This water, as well as the filter press sewage are an excellent fertilizer for corn and

CARD: 1/2

COUNTRY :
CATEGORY : J

ABS. JOUR. : RZhBiol., No. 1959, No. 10704

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : other agricultural crops on well drained sierozem foot-hill plains. In the experience on filtration fields on weakly solonized sierozems which received for the preceding 2-3 years from 60-80 to 90-120 cubic meters of waste water, the agrophysical and agrochemical properties of the soil improved, especially with the combined application of waste water and sewage. The yield of corn grain on the fertilized plots comprised 35-41 centners/ha against 21 centners/ha on the control plots. Waste water and filter press sewage increase sharply the yields of sun-flower, cucurbits, sorghum, onions, and beets. -- N. N. Sokolov

CARD: 2/2

YAVLANOV, I.G., fel'dsher (selo Khabotskoye, Kalininskaya oblast')

Conscientious aspects of the work in a medical and obstetrical station. Fel'd. i akush. 28 no.3:50-51 Mr'63. (MIRA 16:7)
(MEDICINE, RURAL)

SIVOKONENKO, I.M.; YAVLENSKIY, K.N.; YABLONSKAYA, L.V.

Using small-size ball bearings in the manufacture of aeronautical instruments. Trudy LIAP no.11:62-68 '56. (MIRA 11:2)
(Ball bearings)
(Aeronautical instruments)

SOV/124-58-1-176

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 19 (USSR)

AUTHORS: Sivokonenko, I M., Yavlenskiy, K. N.

TITLE: The Rpm Dependence of the Friction Moment in Instrument Ball Bearings (Zavisimost' momenta treniya v pribornykh sharikopodshipnikakh ot chisla oborotov)

PERIODICAL: Tr. Leningr. in-ta aviats. priborostr., 1956, Nr 11, pp 69-80

ABSTRACT: A presentation of the results of theoretical and experimental research on the friction moment of ball bearings operating at high rpm (e. g., in gyroscopes and high-speed motors). The investigations were performed up to 25,000 rpm. The authors are of the opinion that, above 4,000-6,000 rpm, centrifugal forces exert a noticeable influence on the magnitude of the friction moment.

V. M. Alyamovskiy

Card 1/1

VINETS, Ya.M.; SIVOKONENKO, I.M.; SIMKHOVICH, I.S.; YAVLENSKIY, K.N.

Effect of magnetic fields on the antitorque moment in instrument ball bearings. Av.prom. 26 no.8:27-29 Ag '57. (MIRA 15:4)
(Ball bearings--Testing)

SOV/123-59-15-60141

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 15, p 177 (USSR)

AUTHORS: Sivokonenko, I.M., Yavlenskiy, K.N.

TITLE: Variations of the Friction Moment in Instrument Bearings Depending on the Magnitude of Atmospheric Pressure

PERIODICAL: Tr. Leningr. in-t aviats. priborostr., 1958, Nr 19, pp 155 - 158

ABSTRACT: Results are given on the investigations of variations of the moment of friction in lubricated and non-lubricated center bearings and ball bearings with an outer diameter of 10 mm, in dependence on variations of the rarefaction of the surrounding medium. The investigated steel centers or inner bearing races were connected with an electromotor, and the agate thrust bearings and outer bearing races with a dynamometric device consisting of a speculum, electromagnetic damper and hair-spring. The twisting of the latter, under the effect of the moment of friction, was recorded on photographic paper by the deviation of the light ray reflected from the speculum. The drive and dynamometric device were put under a hood

Card 1/2

SOV/123-59-15-60141

Variations of the Friction Moment in Instrument Bearings Depending on the Magnitude of Atmospheric Pressure

from which the air was pumped out. The investigation showed that, at a decrease of atmospheric pressure down to $2 \cdot 10^{-2}$, the moment of friction increases: for center bearings without lubrication by 11%, with lubrication by 15%, and for ball bearings without lubrication by 20%, and with lubrication by 38%. 3 figures, 4 references.

K.S.M

Card 2/2

GORDIYENKO, Prokopiy Lukich; SIVOKONENKO, Igor' Mikhaylovich; FADEYEV, Aleksey Antonovich; YAVLENSKIY, Konstantin Nikolayevich; DEMENT'YEV, Khrisanf Nikiforovich; LYUSTIBERG, V.F., ved.red.; PONOMAREV, V.A., tekhn.red.

[Laboratory equipment for measuring friction force moments in the supports of apparatuses. Device for testing the impact hardness of ice infield conditions]Laboratornaia ustanovka dlia izmereniia momentov sil treniia v oporakh priborov. Ustroistvo dlia ispytaniia udarnoi tverdosti l'da v polevykh usloviiakh. Moskva, Filial Vses.in-ta nauchn.i tekhn. informatsii, 1958. 11 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 32. No.P-58-33/6) (MIRA 16:3)

(Engineering instruments--Testing)

SIVOKONENKO, I.M.; YAVLENSKIY, K.N.

Investigating ball bearings used in gyroscopic devices. Vop. prikl. gir. no.2:16-24 '60. (MIRA 15:4)
(Ball bearings) (Gyroscopic instruments)

YAVLENSKIY, K. N.

PHASE I BOOK EXPLOITATION SOV/6070

Babayeva, Nina Fedorovna, Valentin Mikhaylovich Yerofeyev, Igor' Mikhaylovich Sivokonenko, Yuriy Mikhaylovich Khovanksiy, and Konstantin Nikolayevich Yavlenskiy

Detali i elementy giroskopicheskikh priborov (Parts and Elements of Gyroscopic Devices). Leningrad, Sudpromgiz, 1962. 497 p. Errata slip inserted. 4800 copies printed.

Scientific Eds.: P. P. Koptyayev, Candidate of Technical Sciences, and V. P. Orlov, Engineer; Reviewers: Yu. A. Shcherbakov, Engineer, A. A. Saydov, Doctor of Technical Sciences, and E. I. Sliv, Candidate of Technical Sciences; Ed.: M. I. Nikitina; Tech. Ed.: R. K. Tsal.

PURPOSE: This book is intended for engineers concerned with instrument building and may also be used by students attending instrument-building institutes.

Card 1/4

COVERAGE: The book reviews some problems encountered in designing typical parts and elements of gyroscopic devices: gyromotors, suspension bearings, main bearings, energy transfer devices, correcting and stopping devices, and gyro tracking systems. The authors express their gratitude to Doctor of Technical Sciences V. A. Pavlov and Candidate of Technical Sciences V. V. Khrushchev. There are 114 references: 109 Soviet, 3 German, and 2 English.

TABLE OF CONTENTS [Abridged]:

Parts and Elements (Cont.) SOV/6070

AVAILABLE: Library of Congress

SUBJECT: Navigation and Guidance

Card 4/4

AD/dk/jk
11-6-62

S/146/62/005/005/015/016
D201/D308

AUTHORS: Sivokonenko, I. M. and Yavlenskiy, K. N.

TITLE: Analysis of one of the methods of decreasing friction in bearings

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyenie, v. 5, no. 5, 1962, 134-139

TEXT: The authors analyze the action of slip type and roller type friction bearings and show that by using the bearings which are forcibly made to assume additional motion, the slip-type friction may be decreased approximately 20 times and roller type friction about 10 times. A formula is given for the required number of additional revolutions of the bush in the slip-type friction bearings and those of the raceway in roller type bearings. The results of experiments carried out with forced motion bearings were in good agreement with theoretical assumptions. There are 4 figures.

Card 1/2

Analysis of one ... S/146/62/005/005/015/016
D201/D308

ASSOCIATION: Leningradskiy institut aviatsionnogo priborostroyeniye (Leningrad Institute of Aviation Instruments)

SUBMITTED: February 28, 1962

Card 2/2

ACCESSION NR: AP4037473 S/0146/64/007/002/0164/0170

AUTHOR: Sivokonenko, I. M.; Yavlenskiy, K. N.

TITLE: Investigation of some types of suspension supports in gyroscopic instruments

SOURCE: IVUZ. Priborostroyeniye, v. 7, no. 2, 1964, 164-170

TOPIC TAGS: gyroscope, gyro, gyro suspension, gyro suspension support

ABSTRACT: In the special rolling-contact bearings (TsKB-1321, TsKB-1358, TsKB-2332) used in gyroscopes, a forced rotation is imparted to the mid-rings which roughly cuts down the friction to 1/10 its conventional value. With a vertical axis of the rotating system, the ratio M_{dyn}/M_{st} largely depends on the type of lock (thrust bearing) preventing axial movement of the system; here, M_{dyn} and M_{st} are the friction moments in the bearings with moving and stationary mid-rings, respectively. Design features of the rotating systems are shown in

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Enclosures 1 and 2. On the basis of experimental data, it is reported that the TsKB-1321 bearing with a lock formed by a rolled-in ball has the least friction moment for both vertical and horizontal gyro axes. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Leningradskiy institut aviatsionnogo priborostroyeniya (Leningrad Institute of Aviation Instruments)

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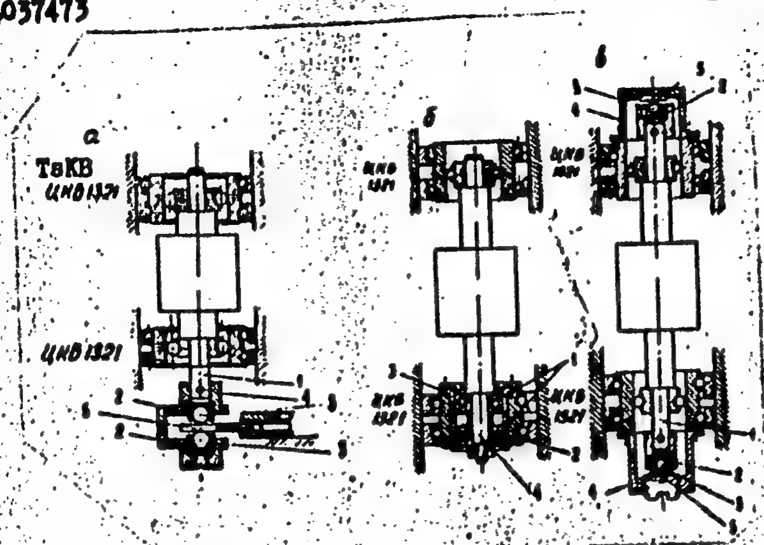
ACCESSION NR: AP4037473

ENCLOSURE: 01

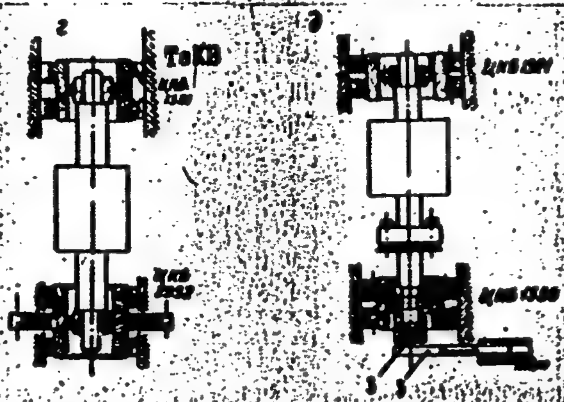


Suspension supports in gyros

Card 3/4

ACCESSION NR: AP4037473

ENCLOSURE: 02



Suspension supports in gyros

Card 4/4

IMSHENETSKIY, A.A., akademik; MISHUSTIN, Ye.N.; LOZINOV, A.B., kand.biolog. nauk; KRINOV, Ye.L., doktor geol.-miner. nauk; KVASHA, L.G., kand. geol.-miner.nauk, starshiy nauchnyy sotrudnik; YAVNEL', A.A., kand. fiz.-mat. nauk, starshiy nauchnyy sotrudnik

Concerning reports on the "discovery" of microbes in meteorites. Biul. VAGO no.34:58-61 '63. (MIRA 17:4)

1. Direktor Instituta mikrobiologii AN SSSR (for Imshenetskiy). 2. Chlen-korrespondent AN SSSR (for Mishustin). 3. Uchenyy sekretar' Komiteta po meteoritam AN SSSR. (for Krinov). 4. Komitet po meteoritam AN SSSR (for Kvasha, Yavnel').

L 00725-67 EWT(m)/EWP(w)/T/EWP(t)/ETI JD/DJ

ACC NR: AP6022068 SOURCE CODE: UR/0146/66/009/003/0141/0144

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AUTHOR: Sivokonenko, I. M.; Yavlenskiy, K. N.; Semenov, L. V.

ORG: Leningrad Institute of Aviation Instrument Building (Leningradskiy institut aviatsionnogo priborostroyeniya)

TITLE: Reducing friction in instrument bearings

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 3, 1966, 141-144

TOPIC TAGS: friction, antifriction bearing, precision instrument industry, forced vibration

ABSTRACT: The author considers bearing friction as one of the factors which affects the accuracy of instrument readings. The three-ring bearings conventionally used for reducing this type of friction may be replaced by radial or radial-thrust bearings. The reasons for friction reduction with forced oscillations of the rings in a bearing with three-point contact are qualitatively analyzed and it is shown that the reduction in the moment of friction increases with a reduction in the angular velocity of the inner ring as compared with that of the outer ring, and with a reduction in the time required for reversing the direction of the outer ring. The friction characteristics of radial-thrust bearings type 6005 are experimentally compared with those of a bearing with three-point contact in a pair with a radial bearing having a smooth inner surface on the outer ring, type A640096. The effect of frequency and amplitude of the oscil-

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lations, load, position of the axis and additional vibration on the moment of friction in the bearings was studied. When the inner rings of the bearing oscillate in opposite directions, friction is reduced by a factor of 8-9 on the average. When the inner or outer rings in both bearings oscillate in the same direction, friction is reduced by a factor of 5-6. The reduction in friction in the bearings increases as the average angular velocity of the forced motion of the rings becomes higher in comparison with that of the movable system. When the average angular velocity of the forced motion of the rings is held constant, the frequency and amplitude of ring motion have practically no effect on the moment of friction in the bearings. Friction may be reduced by a factor of 10-12 by oscillations of the outer rings of both bearings in the same direction and vibrations with an acceleration of greater than 1 g. A further increase in the acceleration of vibrations has no appreciable effect on the moment of friction in the bearings. Orig. art. has: 5 figures.

SUB CODE: 13, 20/ SUBM DATE: 04Feb66/ ORIG REF: 002

Card 2/2 afs

SIVOKONENKO, I.M.; YAVLENSKIY, K.N.

Investigating certain types of supports of gyroscopic instrument suspensions. Izv.vys.ucheb.zav.; prib. 7 no.2:164-170 '64. (MIRA 18:4)

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YAVLENSKIY, S.D.

KAGAN, M.Ye., professor, doktor tekhnicheskikh nauk; SOKOLOVSKIY, B.S., kandidat tekhnicheskikh nauk; YAVLENSKIY, S.D., inzhener.

Application of cemented piles and sheet piling in building hydrotechnical structures. Gidr.stroi. 23 no.3:26-29 '54. (MLRA 7:6)
(Pile driving)

DZHUNKOVSKIY, Nikolay Nikolayevich, zasl. deyatel' nauki i tekhniki RSFSR, prof., doktor tekhn. nauk; KASPARSON, Avgust Al'fredovich, dots., kand. tekhn. nauk; SMIRNOV, Gleb Nikolayevich, dots., kand. tekhn. nauk; SIDOROVA, Aleksandra Grigor'yevna, dots., kand. tekhn. nauk; Prinimali uchastiye: ZIMBLINOV, S.V., doktor tekhn. nauk, prof.; PANTELEYEVV, P.I., kand. tekhn. nauk; YAVLENSKIY, S.D., inzh., retsenzent; SKOBELING, L.V., inzh., nauchn. red.

[Harbors and harbor structures] Porty i portovye sooruzheniia. [By] N.N.Dzhunkovskii i dr. Moskva, Stroiizdat. Pt.1. 1964. 341 p. (MIRA 17:10)

1. Kafedra vodnogo khozyaystva i morskikh portov Moskovskogo inzhenerno-stroitel'nogo instituta im. V.V.Kuybysheva (for all except Yavlenskiy, Skobeling). 2. Zaveduyushchiy kafedroy vodnogo khozyaystva i morskikh portov Moskovskogo inzhenerno-stroitel'nogo instituta im. V.V.Kuybysheva (for Dzhunkovskiy).

YAVLENSKIY, S. D.

Kleyenyye Svai i Shpunt (Cemented Piers and Sheet Piling, By) M. Ye. Kagan, B. S. Sokolovskiy, i S. D. Yavlenskiy. Moskva, Izd-Vo Rechnoy Transport, 1955.
126 P. Illus., Diagrs., Tables.